REMARKS

Claims 1 and 3-29 are presently pending in the application. Claims 16-27 remain withdrawn from consideration.

Paragraph [0009] of the specification has been amended to correct a minor typographical error in the first line and to change "for the" to "forth." Accordingly, withdrawal of the objection to the specification is respectfully requested.

Claim 1 has been amended to incorporate some of the subject matter from claim 2, now canceled. Claims 16, 20 and 21 have been amended to incorporate the subject matter from claims 1, 3, and 9, respectively, and claims 17-19 have been amended to depend from claim 16. No new matter has been added by these amendments, and entry is respectfully requested.

Additionally, claims 1 and 9 have been amended as suggested by the Examiner to replace a period with a comma in claim 1 and to add a space in claim 9. Accordingly, withdrawal of the objections to the claims are respectfully requested.

Finally, claim 28 has been amended to recite "wherein the electrode is implantable in a human," as suggested by the Examiner, and claim 29 has been amended appropriately. In view of these amendments, reconsideration and withdrawal of the § 112, second paragraph rejection are respectfully requested.

In the Office Action, the Examiner restates the Restriction Requirement made orally to William Schwarze on April 18, 2005. Namely, the Examiner requires restriction between the claims of Group I (claims 1-15 and 28-29), drawn to a stimulation electrode, allegedly classified in Class 607, subclass 122, and the claims of Group II (claims 16-27), drawn to a method for producing a stimulation electrode, allegedly classified in Class 29, subclass 729. The Examiner argues that the product of Group I can be made by other, materially different processes, such as by molding rather than PVD, by growing the layer or spraying/depositing the oxide rather than by depositing the metallic layer or an oxidation process, by sputtering rather than oxidizing the titanium electrode base by thermal oxidation, by vacuum technology rather than by oxidizing the tantalum electrode base by thermal oxidation, or with a laser rather than by oxidizing the titanium nitride electrically conducting layer by thermal oxidation. Accordingly, the Examiner requires that Applicants select one group of claims for initial examination.

Applicants hereby confirm the election made orally without traverse to prosecute the claims of Group I, claims 1-15 and 28-29 on the merits. Accordingly, claims 16-27 remain withdrawn from consideration.

The Examiner has also rejected claims 1-5 and 28-29 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,609,611 of Bolz et al. ("Bolz") and claims 1-10, 14-15 and 28-29 have been rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,440,178 of Bussard et al. ("Bussard"). Additionally, claims 1-5 and 28-29 have been rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,606,523 of Jenkins ("Jenkins"). Further, the Examiner has rejected claim 11 under 35 U.S.C. § 103(a) as being unpatentable over Bussard in view of Bolz, and claims 12 and 13 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Bussard in view of U.S. Patent No. 4,677,989 of Robblee ("Robblee"). Applicants respectfully traverse these rejections and the arguments in support thereof as follows, and respectfully request reconsideration and withdrawal of the rejections.

Rejection Under § 102(b) Based on Bolz

Regarding claim 1, the Examiner contends that all of the claimed elements are taught by Bolz in Fig. 4, col. 8, lines 18-19, col. 10, lines 51-52 and col. 8, lines 59-60. The Examiner also asserts that all of the elements of dependent claims 2-5 and 28-29 are also taught by Bolz, and thus concludes that the claims are anticipated by Bolz. Applicants respectfully traverse this rejection as follows.

The stimulation electrode according to the present invention contains a base material which is partially covered with an electrically insulating ceramic layer formed of a particular metal oxide or oxynitride. These metal oxides and oxynitrides are specifically selected for their electrically insulating properties, and may be formed, for example, by depositing a metallic layer and performing thermal, electrochemical or chemical oxidation or oxynitriding.

In contrast, Bolz teaches a stimulation electrode containing a porous surface coating made of an inert material, which may be a nitride, carbide, carbonitride or pure element or alloy of gold, silver, titanium, iridium, platinum or carbon (col. 9, lines 22-23 and col. 10, lines 49-53). The titanium nitride, carbide, and carbonitride materials taught by Bolz are not metal oxides or oxynitrides are claimed, and also are not electrically insulating ceramic materials, but are in fact electrically conductive materials. Therefore, Bolz does not teach or suggest all of the claimed elements, and reconsideration and withdrawal of the § 102(b) rejection based on Bolz are respectfully requested.

Rejection Under § 102(b) Based on Bussard

Regarding claim 1, the Examiner contends that all of the claimed elements are taught by Bussard in Fig. 1, col. 4, lines 4-6 and 19-20, col. 3, lines 11-12, and col. 2, lines 20-21. The Examiner also contends that the elements of dependent claims 2-10, 14-15, and 28-29 are also taught by Bussard, and concludes that Bussard anticipates the present claims. Applicants respectfully traverse this rejection as follows.

As recited in claim 1, the stimulation electrode according to the present invention is formed of a base material which may be gold, carbon, platinum, iridium, a platinum-iridium alloy, or stainless steel. In contrast, Bussard teaches a porous electrode containing a sintered member made of electrically conductive particles. The particles may be a metal, metal alloy, or metal compound of tantalum, titanium, niobium, and/or zirconium or a cobalt-chromium-based alloy (col. 1, lines 59-62). However, Bussard does not teach or suggest that the electrode may be formed of the claimed materials, and thus does not teach or suggest all of the claimed elements. Accordingly, reconsideration and withdrawal of the § 102(b) rejection are respectfully requested.

Rejection Under § 102(e) Based on Jenkins

Regarding claim 1, the Examiner contends that all of the claimed elements are taught by Jenkins in col. 4, lines 48-49 and col. 5, lines 4-8, and that the elements of dependent claims 2-10, 14-15, and 28-29 are also taught by Jenkins. Therefore, the Examiner concludes that Jenkins anticipates the claims, which Applicants respectfully traverse as follows.

Jenkins teaches a stimulation electrode formed of a base material which may be uncoated or coated with a material such as iridium oxide or titanium nitride (col. 5, lines 6-9). However, these materials are electrically conducting, not electrically insulating, and Jenkins does not teach or suggest the claimed ceramic electrically insulating coating. Further, the silicone elastomer of Jenkins is not a ceramic material like the claimed silicon oxide or silicon oxynitride. Accordingly, Jenkins does not teach or suggest all of the claimed elements, and reconsideration and withdrawal of the § 102(e) rejection are respectfully requested.

Rejection Under § 103(a) Based on Bussard in view of Bolz

Regarding claim 11, the Examiner acknowledges that Bussard does not disclose an oxidation protection layer formed of at least one oxide, carbide, nitride, and/or polymer which reduces the impedance of the electrode base member coated with the electrically conducting

layer of titanium nitride, or at most increases the impedance to a value which is smaller than the impedance of the uncoated electrode base member. However, Bolz allegedly discloses such an oxidation protection layer which provides such a property to an electrode base member. Therefore, the Examiner concludes that it would have been obvious to one skilled in the art at the time of the invention to have modified the invention of Bussard to disclose the oxidation protection layer of Bolz to provide the desired impedence reduction or increase, as taught by Bolz, for picking up heart signals for which the low temperature frequency range is particularly important, especially in the region where the signals are weak. Applicants respectfully traverse this rejection as follows.

As previously explained, neither Bolz nor Bussard teaches or suggests all of the claimed elements, and thus even the proposed combination would not render the present invention *prima facie* obvious. Specifically, Bussard does not teach or suggest the claimed base material, but rather teaches tantalum, titanium, niobium, zirconium, or cobalt/chromium based alloys. Bolz does not cure this deficiency, since Bolz only teaches titanium as a possible base material (see claim 18). Thus, even if the electrode of Bussard were to be modified to include the oxidation protection layer of Bolz, the Bussard/Bolz electrode would not contain a base material selected from gold, carbon, platinum, iridium, a platinum-iridium alloy, or stainless steel as claimed. Accordingly, reconsideration and withdrawal of the § 103(a) rejection are respectfully requested.

Rejection Under § 103(a) Based on Bussard in view of Robblee

Regarding claim 12, the Examiner acknowledges that Bussard does not disclose that an oxidation protection layer has a thickness of about 500 nm to about 5 μm. However, Robblee allegedly discloses an oxidation protection layer which has such a thickness for providing a high-charge capacity and a corrosion-resistant interface to metallic electrodes used to inject charge into biological tissue with controlled electrical pulses. Therefore, the Examiner concludes that it would have been obvious to one having ordinary skill in the art at the time of the invention to have modified the invention of Bussard to utilize an oxidation protection layer having the thickness taught by Robblee for providing such properties.

Finally, regarding claim 13, the Examiner acknowledges that Bussard does not teach a ceramic layer having a thickness of about 1 nm to about 20 μm. However, Robblee allegedly teaches a ceramic layer having such a thickness for ensuring that dissolution will not result and the entire electrode will not disappear. Therefore, the Examiner concludes that it would have

been obvious to modify the invention of Bussard to include the ceramic layer having the thickness of Robblee for this purpose. Applicants respectfully traverse this rejection as follows.

Robblee teaches a metal electrode coated with iridum oxide to provide corrosion resistance and increase charge capacity. The Examiner refers to col. 4, lines 60-61 as allegedly teaching the thickness of an oxidation protection layer, and to col. 4, line 63 as allegedly teaching the thickness of a ceramic layer. However, both of these citations recite the thickness of the same iridium oxide layer, which the Examiner appears to be equating with both the claimed oxidation protection layer and the claimed ceramic electrically insulating layer, and thus Applicants submit that the Examiner cannot rely on Robblee as teaching the thicknesses of both the oxidation protection and ceramic insulating layers in claims 12 and 13, since Robblee only teaches one layer.

Further, iridium oxide is a conductive material, and thus is not a ceramic electrically insulating layer. Thus, since Bussard does not teach or suggest the claimed electrically insulating ceramic layer which partially covers the electrode base material, and since Robblee does not cure this deficiency, even the proposed combination would not teach or suggest all of the claimed elements.

Finally, regarding claim 13, even if, *arguendo*, Bussard were to teach a ceramic insulating layer as claimed, there would be no motivation to look to the iridium oxide conductive layer of Robblee for determining a desirable thickness.

For these reasons, reconsideration and withdrawal of the § 103(a) rejection are respectfully requested.

In view of the preceding Amendments and Remarks, it is respectfully submitted that the pending claims are in compliance with § 112, patentably distinct from the prior art of record and in condition for allowance. A Notice of Allowance is respectfully requested.

Respectfully submitted,

Matthias FRERICKS, et al.

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Colleen K Butcher 56,315 for SM Katz
Sandra M. Katz
Agent for Applicant(s)
Registration No. 51,864
Direct Dial: 215-965-1344
E-Mail: skatz@akingump.com

Akin Gump Strauss Hauer & Feld LLP
One Commerce Square
2005 Market Street, Suite 2200
Philadelphia, PA 19103
Telephone No.: 215-965-1200
Fax No.: 215-965-1210

SMK:smk
Enclosure